

## SECONDARY FLOW CONTROL SYSTEM

### Abstract of the Disclosure:

The present invention is a system (20) for controlling various fluid flows, e.g., secondary fluid flows including cavitating fluid flows, typically developed along the shroud line and usually in or around a leading edge (21) within a flow channel (22) of a compressor or pump impeller (23) and inducer/impeller (24). System (20) includes a plurality of devices for controlling various flow conditions. In one embodiment, system (20) includes a diffuser device (27) for stabilizing cavitating flows, a bypass device (28) for re-injecting flow upstream, and a flow control device (30) for selectively directing secondary fluid flow to either the diffuser device or the bypass device. In addition, at very high flow rates, bypass device (28) may also serve as a high-flow, forward-bypass device. Devices (27) and (28) form a pathway for secondary fluid flows, including cavitating flows, around a first portion (31) of a housing (32).

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